SEQUENCE LISTING

<110> Heokstra, Merl F. Xie, Weilin Murray, Brion Mercurio, Frank

<120> METHODS FOR MODULATING SIGNAL
TRANSDUCTION MEDIATED BY TGF-BETA AND RELATED PROTEINS

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<141> 1999-08-29

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<212> PRT

<213> Homo sapien

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<222> (1)...(1)

<223> Xaa = Tyrosine or Phenylalanine

<221> VARIANT

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<223> Xaa = any amino acid; 0-1 residues may be missing

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      Isoleucine
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     <223> Xaa = Leucine or Methionine
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     <223> Xaa = Arginine or Lysine
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Xaa Xaa Gln Phe Xaa Thr Gly Xaa Xaa Arg Leu Pro Xaa Xaa Gly Phe
                          40
Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ile Xaa Xaa
Xaa Xaa Xaa Xaa Xaa Xaa Leu Pro Xaa Xaa His Thr Cys Phe Asn
                  70
                                     75
Xaa Leu Asp Leu Pro Xaa Tyr Xaa Ser Xaa Xaa Xaa Xaa Xaa Xaa
              85
                                 90
Leu Xaa Xaa Ala Ile Xaa Xaa Xaa Xaa Xaa Phe
                             105
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            (e.g., S,H,P,D,E,T or Y)
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      <223> Xaa = any amino acid
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      <222> (31)...(31)
      <223> Xaa = independently selected polar amino acid
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                                    10
Xaa Tyr Tyr Xaa Xaa His Asn Thr Xaa Thr Thr Xaa Trp Xaa Xaa Pro
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25

Xaa <210> 3 <211> 38 <212> PRT <213> Homo sapien <400> 3 Ser Pro Leu Pro Pro Gly Trp Glu Glu Arg Gln Asp Ile Leu Gly Arg . 10 Thr Tyr Tyr Val Asn His Glu Ser Arg Arg Thr Gln Trp Lys Arg Pro Thr Pro Gln Asp Asn Leu 35 <210> 4 <211> 38 <212> PRT <213> Homo sapien <400> 4 Ser Gly Leu Pro Pro Gly Trp Glu Glu Arg Gln Asp Ile Leu Gly Arg Thr Tyr Tyr Val Asn His Glu Ser Arg Arg Thr Gln Trp Lys Arg Pro 20 25 Thr Pro Gln Asp Asn Leu 35 <210> 5 . <211> 38 <212> PRT <213> Homo sapien <400> 5 Gly Phe Leu Pro Lys Gly Trp Glu Val Arg His Ala Pro Asn Gly Arg 5 Pro Phe Phe Ile Asp His Asn Thr Lys Thr Thr Trp Glu Asp Pro 20 Arg Leu Lys Ile Pro Ala 35. <210> 6 <211> 38 <212> PRT <213> Homo sapien <400> 6 Gly Pro Leu Pro Pro Gly Trp Glu Glu Arg Thr His Thr Asp Gly Arg 5 10 Ile Phe Tyr Ile Asn His Asn Ile Lys Arg Thr Gln Trp Glu Asp Pro 20 Arg Leu Glu Asn Val Ala

35

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      <213> Saccharomyces cerevisiae
Gly Arg Leu Pro Pro Gly Trp Glu Arg Arg Thr Asp Asn Phe Gly Arg
                                   10
Thr Tyr Tyr Val Asp His Asn Thr Arg Thr Thr Trp Lys Arg Pro
           20
Thr Leu Asp Gln Thr Glu
       35
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Gly Glu Leu Pro Ser Gly Trp Glu Gln Arg Phe Thr Pro Glu Gly Arg
Ala Tyr Phe Val Asp His Asn Thr Arg Thr Thr Trp Val Asp Pro
           20
                               25
Arg Arg Gln Gln Tyr Ile
       35
   <210> 9
      <211> 38
      <212> PRT
      <213> Saccharomyces cerevisiae
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Gly Pro Leu Pro Ser Gly Trp Glu Met Arg Leu Thr Asn Thr Ala Arg
Val Tyr Phe Val Asp His Asn Thr Lys Thr Thr Trp Asp Asp Pro
           20
                               25
Arg Leu Pro Ser Ser Leu
       35
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      <211> 38
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      <213> Homo sapien
      <400> 10
Leu Pro Ser Gly Trp Gly Trp Glu Gln Arg Lys Asp Pro His Gly Arg
Thr Tyr Tyr Val Asp His Asn Thr Arg Thr Thr Trp Glu Arg Pro
           20
                               25
Gln Pro Leu Pro Pro Gly
       35
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                                    10
Val Tyr Tyr Val Asp His Asn Thr Arg Thr Thr Trp Gln Arg Pro
Thr Met Glu Ser Val Arg
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      <211> 38
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1
                5
                                    10
Val Tyr Phe Val Asn His Asn Thr Lys Thr Thr Gln Trp Glu Asp Pro
           20:
                                25
Arg Thr Gln Gly Leu Gln
       35
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Glu Pro Leu Pro Glu Gly Trp Glu Ile Arg Tyr Thr Arg Glu Gly Val
                                    10
1
Arg Tyr Phe Val Asp His Asn Thr Arg Thr Thr Thr Phe Lys Asp Pro
     . 20
                                                 . 30
                                25
Arg Asn Gly Lys Ser Ser
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Pro Pro Xaa Tyr
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Xaa Pro Pro Pro Xaa Tyr
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      <211> 6
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      <400> 16
Thr Pro Pro Pro Ala Tyr
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      <210> 17
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                 5
      <210> 18
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      <400> 18
Thr Pro Pro Pro Gly Tyr
 1
                 5
      <210> 19
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                                     10
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      <211> 14
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Gly Pro Glu Ser Pro Pro Pro Pro Tyr Ser Arg Leu Ser Pro
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1
                 5
                                     10
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Pro Ala Asp Thr Pro Pro Pro Ala Tyr Met Pro Pro Asp Asp
      <210> 24
      <211> 14
      <212> PRT
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      <400> 24
Ile Pro Glu Thr Pro Pro Pro Gly Tyr Ile Ser Glu Asp Gly
      <210> 25
      <211> 14
      <212> PRT
      <213> Homo sapien
      <400> 25
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Tyr Val Asp His Asn Thr Arg Thr Thr Trp Glu Arg Pro Gln Pro
           20
                                25
                                                     30
Leu Pro Pro Gly Trp Glu
        35
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      <211> 14
      <212> PRT
      <213> Homo sapien
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Pro Ala Asp Thr Pro Pro Pro Ala His Leu Pro Pro Glu Asp
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1
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Ile Pro Gly Thr Pro Pro Pro Asn His Asp Ser Leu Arg Leu
                                    10
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<210> 32

<211> 380

<212> PRT



<213> Homo sapien

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	Clir		400>		Two	Lou	λlο	иіс	Dho	λκα	Тълг	Tan	Cvc	Gln	Car	Van:
	1	Pile	ALG	пр	ьуs	цец	Ald	птъ	rne	10	тут	ьеи	Cys	GIII	15	Asn
		T 011	Dro	Cor		tta l	Lvc	Tlo	λαη		Ser	λνα	Cln	Thr		Dhe
	Ата	пец	PIU	20	птр	vai	пуъ	116	25	vaı	261	Arg	GIII	30	пеа	FIIC
	<i>α</i> 1	7 ~~	Cox		C1 ~	C15	т1.	Mot		T 011	Tira	.D~c	T'		T 011	7.50
	GIU	Asp		Phe	GIII	GTII	116		Ala	ьеи	Lys	PLO	1 y 1 4 5	Asp	ьеu	ALG
	7	7	35	m	17.a.l	т1.	Dho	40	C1	C1	C1	C1		λαο	Ф	C1
	Arg		ьeu	ıyı	vai	rre		Arg	GTÀ	GIU	Glu		ьеи	Asp	тÀт	GIY
•	a 1	50 	7.7.	7	01	Т~~	55 Dbo	Dho	T 0	T 0	C 0.22	60	C1	1701	T 011	7 000
	-	Leu	Ald	Arg	GIU	_	Pne	Pne	ьеи	ьeu		HIS	GIU	vaı	ьeu	Asn:
	65 D	M	m	C	T	70 Dbo	<i>α</i> 1	Т	ח ר ת	a 1	75	7 ~ ~	7.~~	T	C++0	80
	PIO	Mec	тУг	cys		Pile	GIU	тăт	Ата		Lys	ASII	ASII	тут	95	ьеи
	<i>(</i> 1 m	т1.	7 ~ ~	Dwo	85	Cox	Th x	т1.	700	90 Dxa	7 0 0	ui a	Ι Ου	Cox		Dho:
	GIII	116	ASII	100	Ald	Ser	1111	TIE		PIO	Asp	птъ	Leu	110	тут	PHE
	C	Dho	T] _		7 ~~~	Dho	T10	77.	105	77-	T 011	Dho	LLia		1	· Dho ·
	cys	Pne	115	GIY	Arg	rne	116	120	Met	Aia	Leu	PHE	125	GIY	пур	FIIE
	Tlo	7.00		C1	Dho	202	T 011		Dho	Пъ гъс	Tva	7 2 2		T ON	Car	Taro
	116	130	1111	GIY	PHE	ser	135	PIO	FIIE	ıyı	Lys	140	Mec	пеп	Sei	гур
	T		Th×	Tlo	Tara	λαν		a1. ,	Cor	Tlo	λαν		C1.,	Dho	Тъ гъ	λan:
	_	neu	TILL	116	пур	150	ьец	Giu	Ser	116	155	1111	:310	FIIE	ıyı	Asn: 160
	145	Toui	Tlo	Tro	Tla		λαη	λαη	λαη	Tlo		Glu	Cvc	Glv	T. 211	Glu
	261	TIEU	116.	пр	165	Arg	Азр	ASII	ASII	170	GIU	Giu	Cys	Gry	175	GI.u.
	Mot	T's 220	Dho	Car		λαν	Mot	Glu	Tlo		Glv	Laze	(/ລ]	Thr		His.
	Mec	.L y .L	rne	180	vai	тэр	ricc	Giu	185	пси	Oly	шуз	Val.	190		111.5
	Δen	T.eu	Taze		Glv	Glv	Ser	Δsn		T.eu	Val	Thr	Glu		Asn	Lys
	лор	шса	195	1100	Oly	GLY.	OCT	200	110.	лец	vai	11.1	205	014	11511	цу
	Agn	Glu		Tle	Glv	Leu	Met		Glu	Trp	Ara	Phe		Ara	Glv	Val
	1100	210	* 1 *	;	Ory	ДСС	215	211.	01 0	112	11129	220	001			· u,_,
	Gln.		Gln	Thr	Lvs	Ala		Leu	Asp	Glv	Phe		Glu	Val	Val	Pro:
	225				-1-	230				1	235					240
		Gln	Trp	Leu	Gln		Phe	Asp	Glu	Lvs	Glu	Leu	Glu	Val	Met	
					245	- 1 -				250					255	
	Cvs	Glv	Met	Gln		Val	Asp	Leu	Ala		Trp	Gln	Arq	Asn	Thr	Val
	-1	1		260					265	_	_		-	270		
	Tvr	Arq	His	Tyr	Thr	Arq	Asn	Ser	Lys	Gln	Ile	Ile	Trp	Phe	Trp	Gln
	-		275	-		~		280	-				285		•	
	Phe	Val	Lys	Glu	Thr	Asp	Asn	Glu	Val	Arq	Met	Arg	Leu	Leu	Gln	Phe -
		290	-			-	295			_		300				
	Val	Thr	Gly	Thr	Cys	Arg	Leu	Pro	Leu	Gly	Gly	Phe	Ala	Glu	Leu	Met
	305		-		-	310				_	315					320
	Gly	Ser	Asn	Gly	Pro	Arq	Asn	Ser	Gln	Lys	Phe	Cys	Ile	Glu	Lys	Val
	-			•	325	_				330		_			335	
	Gly	Lys	Asp	Thr	Trp	Leu	Pro	Arg	Ser	His	Thr	Cys	Phe	Asn	Arg	Leu
	-	_	-	340	-				345			_		350	_	
	Asp	Leu	Pro	Pro	Tyr	Lys	Ser	Tyr	Glu	Gln	Leu	Lys	Glu	Lys	Leu	Leu
	-		355					360					365			
	Phe	Ala	Ile	Glu	Glu	Thr	Glu	Gly	Phe	Gly	Gln	Ģlu				
		370					375					380				